

CLAIMS

1. A method for transmitting data packets from a mobile terminal to a base station using a hybrid automatic repeat request protocol and soft combining of received data, the method comprising the steps of:

transmitting a data packet from the mobile terminal to the base station via a first data channel,

receiving a feedback message from the base station at the mobile terminal, wherein the feedback message indicates whether the data packet has been successfully received by the base station,

in case the feedback message indicates that the data packet has not been received successfully, transmitting the retransmission data packet from the mobile terminal to the base station via a second data channel.
2. The method according to claim 1, wherein the transmission time interval of the first data channel is smaller than the transmission time interval of the second channel.
3. The method according to claim 1 or 2, further comprising the step of:

determining the transmission power for a retransmission of the data packet, in case the feedback message indicates that the data packet has not been received successfully, and

wherein the retransmission data packet is transmitted at a transmission power lower than the transmission power of the transmitted data packet.
4. The method according to one of claims 1 to 3, further comprising the step of subsequently reducing the transmission power for subsequent retransmission data packets that are sent for the unsuccessfully received data packet.
5. The method according to one of claims 1 to 4, further comprising the step of soft combining each retransmission data packet with the data packet at the base station.
6. The method according to claim 5, further comprising the step of selecting in the mobile terminal the transmission power for the transmission of the

retransmission data packet based on or considering at least one of a measured channel quality, power control commands received from the base station, and an additional diversity and processing gain obtained by using a longer transmission time interval on the second data channel.

7. The method according to one of claims 1 to 6, wherein the retransmission data packet and the transmitted data packet comprise the same payload.
8. The method according to one of claims 1 to 7, wherein the retransmission data packet is transmitted by the mobile terminal after a predetermined time span upon having received said feedback message.
9. The method according to claim 1 or 2, further comprising the step of:

in case the feedback message indicates that the data packet has not been received successfully, receiving a control message from the base station for the unsuccessfully received data packet, wherein the control message restricts the amount of information in a retransmission data packet to be sent for the data packet, and

wherein the retransmission data packet is transmitted from the mobile terminal to the base station comprising an amount of information indicated in said control message.
10. The method according to claim 9, wherein control message indicates the maximum and minimum amount of information or the maximum amount of information sent in the retransmission data packet. The information sent in the retransmission data packet may comprise systematic and parity bits.
11. The method according to claim 9 or 10, wherein the transmission of the indicated amount of information requires a reduced transmission power compared to the transmission power used for the data packet.
12. The method according to one of claims 9 to 11, wherein the control message is transmitted in parallel or delayed to the feedback message from the base station to the mobile terminal.

13. The method according to one of claims 9 to 12, wherein the feedback message is transmitted via an acknowledgment channel and the control message is transmitted via a scheduling related control channel.
14. The method according to one of claims 9 to 13, wherein the retransmission data packet is transmitted by the mobile terminal after a predetermined time span upon having received said feedback message.
15. The method according to claim 14, wherein control message indicates not to transmit the retransmission data packet after a predetermined time span upon having received said feedback message
16. The method according to one of claims 9 to 15, wherein the control message is a TFC control message.
17. The method according to one of claims 9 to 16, further comprising the step of soft combining the retransmission data packet and the transmitted data packet at the base station to obtain a combined data packet.
18. The method according to claim 7, further comprising the step of decoding the combined data packet at the base station.
19. The method according to claim 18, wherein the transmitted control message indicates the retransmission data packet's amount of information necessary for successfully decoding of the combined data packet.
20. The method according to one of claims 1 to 19, further comprising the step of determining the amount of information for the retransmission data packet at the base station based on the reception quality of the data packet or the combined data packet.
21. The method according to one of claims 1 to 20, wherein the data packet and the retransmission data packet are transmitted via dedicated transport channels.
22. A mobile terminal transmitting data packets to a base station using a hybrid automatic repeat request protocol and soft combining of received data, the mobile terminal comprising:

transmitting means for transmitting a data packet to the base station via a first data channel,

receiving means for receiving a feedback message from the base station, wherein the feedback message indicates whether the data packet has been successfully received by the base station, and

wherein the transmitting means is adapted to transmit the retransmission data packet to the base station via a second data channel in case the feedback message indicates that the data packet has not been received successfully.

23. The mobile terminal according to claim 22, wherein the mobile terminal comprises means for performing the method according to one of claims 1 to 21.

24. A base station receiving data packets from a mobile terminal using a hybrid automatic repeat request protocol and soft combining of received data, the base station comprising:

receiving means for receiving a data packet from the mobile terminal via a first data channel,

transmitting means for transmitting a feedback message to the mobile terminal, wherein the feedback message indicates whether the data packet has been successfully received by the base station, and

wherein the receiving means is adapted to receive a retransmission data packet from the mobile terminal via a second data channel in case the feedback message indicates that the data packet has not been received successfully.

25. The base station according to claim 24, wherein the base station comprises means adapted to perform the method according to one of claims 1 to 21.

26. A mobile communication system comprising at least one mobile terminal according to claim 22 or 23 and at least one base station according to claim 24 or 25.

27. A computer-readable medium for storing instructions that, when executed on a processor, cause the processor to transmit data packets from a mobile

terminal to a base station using a hybrid automatic repeat request protocol and soft combining of received data by:

transmitting a data packet from the mobile terminal to the base station via a first data channel,

receiving a feedback message from the base station at the mobile terminal, wherein the feedback message indicates whether the data packet has been successfully received by the base station,

in case the feedback message indicates that the data packet has not been received successfully, transmitting the retransmission data packet from the mobile terminal to the base station via a second data channel.

28. A computer-readable medium for storing instructions that, when executed on a processor, cause the processor to transmit data packets from a mobile terminal to a base station using a hybrid automatic repeat request protocol and soft combining of received data by:

transmitting a data packet from the mobile terminal to the base station via a first data channel,

receiving a feedback message from the base station at the mobile terminal, wherein the feedback message indicates whether the data packet has been successfully received by the base station,

in case the feedback message indicates that the data packet has not been received successfully, transmitting the retransmission data packet from the mobile terminal to the base station via a second data channel.

29. The computer-readable medium according to claim 27 or 28, wherein the transmission time interval of the first data channel is smaller than the transmission time interval of the second channel.